DEPARTMENT OF COMMUNITY DEVELOPMENT SERVICES

Planning Division

m e m o r a n d u m

TO: Bruce Walden, Chief Administrative Officer

FROM: William R. Gray, Public Works Director
Elizabeth H. Tyler, AICP, Director, City Planner

DATE: November 21, 2006

SUBJECT: East Urbana Interceptor Study Update and Design Request

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Introduction

This request deals with planning and design to meet future needs for sewage collection along the eastern and southern areas of Urbana. Specifically, the requested actions are to:

(1) Accept the preliminary engineering report results for the East Urbana Interceptor Study (attached), and

(2) Direct City staff to proceed with preparing an intergovernmental agreement between the City of Urbana and the Urbana-Champaign Sanitary District for the engineering design for the East Urbana Interceptor. This intergovernmental agreement would be submitted for Council review and approval at a future meeting.

The proposed East Urbana Sewer Interceptor would provide infrastructure to allow sewer service collection along the eastern and southern areas of Urbana, consistent with future land development patterns as depicted in the 2005 Comprehensive Plan. Specifically, this infrastructure would include a new sewage pump station with interceptor sewer lines extending 400 feet from it toward the north, east and south; removal of the existing pump station; and construction of a sewer force main from the pump station to the Northeast Wastewater Treatment Plant. As development occurs over the coming decades, developers will still need to extend sewer lines just as they have in the past to connect into the system.

No changes are being proposed to the Comprehensive Plan or Future Land Use Maps as part of this request.

Background

In February 2001, the Urbana & Champaign Sanitary District (UCSD) issued a multi-volume *Long Range Facility Plan* based upon work completed by Consoer Townsend Envirodyne Engineers, Inc. This planning effort was the first completed by the District in over 25 years and addresses the District's facilities planning area, interceptor sewer service area plan, treatment facilities long range plan, and a financial plan. An executive summary of this Plan is attached for reference. As part of the *UCSD Long Range Facility Plan*, Sodemann & Associates prepared the *Interceptor Sewer Service Area Plan Technical Memorandum 11* (TM-11) and associated map indicating potential sanitary sewer routing in East Urbana.

The Urbana Comprehensive Plan Steering Committee, Urbana Plan Commission, and City Council conducted an extensive review of the *Long Range Facility Plan* in terms of its technical, land use planning, and financial implications. The Long Range Facility Plan was referenced in developing the *2005 Comprehensive Plan*. While there were concerns on the part of the City about the financial planning and equity of the fee recovery systems for the *Long Range Facility Plan*, the technical and land use planning aspects of the Plan were determined to be in the best interests of the City. A Resolution Regarding the Urbana and Champaign Sanitary District Long Range Plan endorsing the facilities planning area, interceptor sewer service area plan, and treatment facilities long-range components was passed by the City Council on September 4, 2001 (Res. No. 2001-09-026R, copy attached).

The East Urbana Interceptor report now under consideration is an outgrowth of Sodemann's 2000 report. The current report is intended to form the basis for designing a relocated Myra Pump Station and future sewer interceptor routes as anticipated in the Long Range Facility Plan.

In 2005, the Engineering Division of the City of Urbana was tasked with developing a proposed plan and cost estimate for providing sanitary sewer service for the developing area on the south and east side of Urbana. A preliminary plan for providing sanitary sewers for east Urbana was included in the *Interceptor Sewer Service Area Plan Technical Memorandum 11* (TM-11) prepared by Sodemann & Associates for the Urbana Champaign Sanitary District (UCSD) in December 2000. A more detailed analysis of the infrastructure required for sanitary sewers in south and east Urbana was completed in a preliminary engineering report prepared by Sodemann & Associates for the UCSD and City in August 2006 as revised in November 2006 (copies enclosed). The sewer infrastructure proposed is described below and shown on the attached Figure #1.

The East Side Interceptor Project will consist of:

- A new regional pump station.
- A new 36-inch diameter interceptor sewer between the existing Myra Pump Station and New Regional Pump Station.
- New 30-inch diameter force main to the Northeast Wastewater Treatment Plant.
- Abandoning the existing Myra Pump Station.
- Construct a new 24-inch and 18-inch diameter sanitary sewer interceptors 400-feet north, south, and east of the new Regional Pump Station.

The new interceptors and pump station would provide sanitary sewer service for an area east of Route IL 130, south of I-74 and north of Curtis Road.

Financial Impact

The preliminary engineering report estimates the project cost at $7.9 million dollars. The preliminary engineering report estimated that UCSD's share would be $3.9 million dollars (49%) which included the 36-inch interceptor, a portion of the pump station, and a portion of the force main. The City's share would be $4.0 million dollars (51%) and includes the 24- and 18-inch interceptors, a portion of the lift station, and a portion of the force main. The cost shares are determined by all existing facilities and waste to be incorporated into the proposed work at UCSD expense (49%) and all new development and corresponding waste will be at City (to be recovered via developers) expense (51%).

UCSD's desire is to finance the project through a State Revolving Fund (SRF) loan from the Illinois Environmental Protection Agency. The SRF loan would be a twenty-year term at a below market interest rate currently at 2.5%. The City's debt service on the $4.0 million dollar share of the project cost would be $254,700.

The City would recover its share of the project costs through an interceptor cost recovery fee for the area to be served. The City of Champaign, Village of Savoy, and UCSD all charge an interceptor cost recovery fee for new development. A summary of area cost recovery fees is presented below:

DESCRIPTION	FIGURE	SOURCE
CHAMPAIGN RECOVERY FEE	$190/P.E.*	CHAMPAIGN
SAVOY RECOVERY FEE	$160/P.E.	SAVOY
UCSD RECOVERY FEE	$180/P.E.	UCSD

* P.E. stands for population equivalent which is a term used to evaluate the impact of industrial or other waste on a treatment works or stream. One population equivalent is 100 gallons of sewage per day.

The interceptor cost recovery fee for the East Urbana Interceptor will be determined at a later date and adopted by ordinance. The City will have to provide the initial funds to finance the project until sufficient development occurs to cover the projects costs through the interceptor cost recovery fee.

Planning Implications

The Urbana and Champaign Sanitary District's performance standard is to serve all developed areas in the urbanized area, as reflected by a Facilities Planning Area (FPA). As changes in the patterns and character of development are anticipated, UCSD's infrastructure plans must respond to these changes. Land use changes are shaped by adopted land use policies for future growth and development with the City's comprehensive plan playing a central role. Ideally, sewage facility plans complement and are interrelated with comprehensive land use plans. This has

certainly been the case for Urbana as the City was able to play an active role in reviewing and informing the *UCSD Long Range Facility Plan* as a part of the City's Comprehensive Plan effort.

Presently, East Urbana drainage basins served by the existing sewer system are largely developed, meaning that any substantial future development in south or east Urbana would occur in one or more new drainage basin(s). Installation of pump stations and interceptor sewage lines to serve new drainage basins is not a new practice. The last interceptor line in Urbana was installed approximately 30 years ago and has fulfilled its need to serve development for those decades. Looking regionally, pump stations are also being installed in Champaign/Savoy and for the University of Illinois' South Research Park to accommodate new growth. Failure to invest in new sewer infrastructure in Urbana would result in the inability to grow to the east and south as shown in the future land use maps in the *2005 Comprehensive Plan*. Additional sewer capacity remains in North Urbana, but environmental, land use, and ownership restrictions have tended to constrain growth in this direction.

City staff reviewed the East Urbana Interceptor preliminary report in terms of the City's current land use policies. The *Comprehensive Plan* is the City's adopted policy guide for future growth and development. The Plan was used as the basis for determining future development in preparing the Preliminary Engineering Report now under consideration. Specifically, the Plan provided the basis for the locations, types, and intensities of land uses used to calculate the anticipated future sewer demand on a per acre basis. City staff provided UCSD and Sodemann data for their use.

The most pertinent information used for anticipating future development came from Future Land Use Maps 7 & 14 of the Urbana *Comprehensive Plan* (copies attached). Map 7 shows future land uses in the Route IL 130 corridor within the planning time horizon. Current and anticipated sewer service areas are depicted on Map 7 with a red dashed line depicting the approximate boundary of what can be served by the existing sewer system, and a blue dashed line depicting the additional area anticipated to be served by the East Side sewer interceptor. Map 14 shows both the existing and anticipated sewer service areas. The area on Map 14 to be served by the East Side sewer interceptor is annotated with, "Area outside UCSD service area; can be served by gravity with new interceptors."

It should be noted that the location of the existing and anticipated sewer areas were based on the best available data at the time of the *2005 Comprehensive* Plan but that the East Urbana Interceptor report currently under consideration provides a more accurate depiction of areas which could eventually be served by gravity sewers.

In terms of the Comprehensive Plan's Goals and Objectives, the following are pertinent:

Goal 15.0 Encourage compact, contiguous and sustainable growth patterns.

Objective

15.2 Extend utilities and services in an orderly fashion to encourage compact, contiguous growth.
15.5 Promote intergovernmental cooperation on development and growth issues.

Goal 35.0 Expand utility infrastructure in areas considered most suitable for growth.

Objective

35.1 Locate new development in areas with ready access to urban services including sewer, utilities, transit and municipal services.
35.3 Work with the Urbana-Champaign Sanitary District to implement necessary interceptor and treatment facility improvements to serve the City's planning area.
35.4 Encourage coordinated area development efforts that allow several landowners and developers to share the expense of utility extension.

The proposed East Urbana interceptor conforms to Goal 15 to have contiguous growth patterns. This is because the proposed new sewer service area is not only contiguous with and an outgrowth of existing development, but the City's intergovernmental agreement with UCSD requires property to be annexed as a requirement for sewer service. Second, providing sanitary sewer service allows for compact and sustainable growth patterns because it allows for development densities not possible using septic systems. Development using septic systems is characteristically very low density. Providing sewer service is a prerequisite for development of urban densities.

The proposed East Urbana interceptor similarly conforms to Goal 35 in that the development to be served is anticipated by the 2005 Comprehensive Plan, specifically Maps 7 & 14. The interceptor will provide ready access to a critical urban service and will directly implement Objective 35.3 – "Work with the Urbana-Champaign Sanitary District to implement necessary interceptor and treatment facility improvements to serve the City's planning area." In terms of sharing expenses for utility extension, even with construction of an interceptor, developers will still need to construct sewer lines as traditionally required which tie into the overall sewage collection system. Developers will also be responsible for the funding of the improvements through the use of the interceptor cost recovery fee described above.

In terms of the Comprehensive Plan's Implementation Program, the East Side Interceptor report is anticipated in the following Implementation Strategies:

> *"Coordinate with the Urbana-Champaign Sanitary District (UCSD) to implement the North Urbana and East Urbana Interceptor projects identified in the UCSD Long Range Facilities Plan. (page 94)*
>
> "*Study appropriate assessments and infrastructure recapture agreements to provide necessary funding for planned capital improvements such as roadway and sewer extensions*." (page 87)

In conclusion, the proposed East Urbana Interceptor will be necessary to serve new development anticipated for the next few decades by the *2005 Urbana Comprehensive Plan*. Acceptance of

the East Side Interceptor preliminary engineering report is in accordance with City development policies adopted as part of the *2005 Comprehensive Plan* and would serve development in areas anticipated by that plan. Furthermore, design plans for the East Side Interceptor correspond with the 2000 *UCSD Long Range Facility Plan* which has previously been endorsed by the City Council.

Plan Commission Review

The Mayor has requested Urbana Plan Commission review and consider the East Urbana Interceptor Study Update and Design Report with respect to planning implications. At their November 16, 2006 meeting, following a detailed presentation and discussion, the Plan Commission voted unanimously to recommend that the City Council accept the East Side Interceptor study and furthermore found it to be in compliance with the *2005 Comprehensive Plan*.

Recommendations

At their November 16, 2006 meeting, the Plan Commission voted unanimously to recommend that the City Council accept the East Side Interceptor study. City staff recommends that the City Council:

(1) Accept the preliminary engineering report on the results of the East Urbana Interceptor Study, and
(2) Direct City staff to prepare an intergovernmental agreement between the City and the Urbana-Champaign Sanitary District for the engineering design of the East Urbana Interceptor.

Prepared by:

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Robert Myers, AICP, Planning Manager

Attachments:
Executive Summary of UCSD Draft Long Range Plan
Resolution 2001-09-026R
Figure 1, East Urbana Interceptor Service Area
Future Land Use Maps 7 and 14

Separate:

Sodemann and Associates, Inc., Preliminary Engineering Report for the East Side Interceptor, August 22, 2006, updated November 2006.

cc: Gale Jamison, Engineering Division
Andrew Kieser, Sodemann and Associates, Inc.
Mike Little, Urbana Champaign Sanitary District

Executive Summary:

The Urbana and Champaign Sanitary District (UCSD) has prepared this report to develop alternatives and propose an alternative for providing sanitary sewer service to areas in east Urbana. The two main goals of the proposed project are:

- Replace the existing Myra Pump Station, which serves much of east Urbana, with a new pump station. The existing pump station is reaching capacity and is near the end of its useful life.

- Provide sewer service to new development in east Urbana: The area (approximately 3000 acres, or about 5 square miles) generally bounded on the north by I74, East by Cottonwood Drive, West by IL Route 130, and south by Curtis Road, does not currently have sewer service. Because the area is so far from the UCSD Northeast Treatment plant, pumping would be required.

The proposed selected alternative includes construction of a new pump station, approximately one mile east of the existing Myra Pump Station. The existing Myra Pump Station would be abandoned and the current and future anticipated flows into the existing pump station would be routed east into the new East Urbana Pump Station. Flow from new development in east Urbana would also be routed into the new pump station. Proposed under this project would be a 21" sewer stub to the north and a 30" sewer stub to the south that would serve as a connection point for future gravity sewers to be built as development of the area proceeds.

Costs for this project would be shared by UCSD and the City of Urbana. Essentially UCSD would be responsible for the portion of the project that replaces the existing Myra Pump Station. Urbana would be responsible for the portion of the project driven by development of the 5 square miles mentioned above.

The proposed project would include the East Urbana Pump Station, which would have an ultimate capacity of 20 million gallons per day (MGD) and would hold up to five 100 +/- horsepower pumps. The pump station would be equipped with an automatic bar screen to remove debris, and an alternate power source for reliability.

The project would also include force mains that would deliver pumped flow to the UCSD Northeast Treatment Plant and gravity sewers that would carry flow into the new pump station. There would be two force mains, one existing 16" and one new 30" that would transport the wastewater from the pump station to the UCSD Northeast Treatment Plant. Gravity flow into the pump station would be carried in a 36" pipe from the west (existing Myra Pump Station flow), a 21" pipe from the north (flow from new development north of the new pump station, east of IL Route 130, west of Cottonwood Drive, and north to I74 and a 30" pipe from the south (flow from new development south of the pump station, east of IL Route 130, west of

Cottonwood Drive, and south to Curtis Rd – also new development west of IL Route 130, south of Windsor Rd, north of Curtis Rd, and east of Race St)

The preliminary estimated costs for this project are:

UCSD	$3,937,000
City of Urbana	$3,970,000
Total Project Cost	$7,907,000

A. BACKGROUND

A conceptual design of the proposed project was included in the 2002 Long Range Facility Plan of the Urbana & Champaign Sanitary District (UCSD). Chapter 12, Interceptor Sewer Service Area Plan, Technical Memorandum 11 (TM-11) describes the conceptual design of the ultimate sewer system required to serve out to the limits of the UCSD Facilities Planning Area Boundary. Due to the topography of the area within that boundary, it is necessary to locate a major pump station at the central low point and route future interceptor sewers to that point so flows can then be pumped to the UCSD Northeast Treatment Plant. An updated Map 5 from T.M.-11, included in the back of this report, shows preliminary locations of the new pump station, forcemain, and tributary interceptor sewers.

Recently, a new Super Wal-Mart store was constructed at the southeast corner of the intersection of US Route 150 and IL Route 130 in Urbana. Additional development in the area is expected in the near future, since several large tracts of land adjacent to the Wal-Mart property have recently been sold via auction to developers. UCSD, in cooperation with the City of Urbana, has prepared this report to form the basis of design for the new pump station, herein after referred to as the East Urbana Pump Station, and the interceptor sewers tributary to it.

B. PURPOSE

The main focus of this report is to develop an alternative that is the most economically feasible and most readily constructible with regard to depth, location, and ease of obtaining easements**.** This report compares the alternates and discuss the benefits of each.

UCSD would apply for an IEPA low interest loan to fund construction of this project. Currently, the UCSD has sufficient funds on hand to repay the loan without affecting the current rate schedule. The City of Urbana would act as the initial developer for this project. The District and the City would intend to recover their costs as development occurs. Preliminary cost estimates are presented to show each participant's cost to construct the proposed project.

C. BASIS OF DESIGN

For each of the alternates, the sewer collection system would be designed in compliance with UCSD policies as well as the Illinois Recommended Standards for Sewage Works, latest edition.

The UCSD criteria of 4,700 gallons per acre per day (peak flow) would be used to determine the required hydraulic capacity of sewers, whether they are sized as an interceptor or collector. This sizing criterion has been used extensively in the past by the UCSD and has proven to be adequate for a wide range of development types, including commercial and industrial areas.

The design of all sewers, including both collector sewers and interceptor sewers, assumes a minimum sewer depth of approximately 10 feet since additional lateral sewers must be further extended upstream from the collector or interceptor to the actual buildings being served. It is expected that these depths would allow for future developers to raise each building site elevation by 1.5 feet, lay 150 feet of 6" pipe at 1.00% slope, maintain 3.5 feet of depth for the service line at the foundation, and have a six inch drop at the service connection to the collector sewer.

It was also assumed that all collector, trunk and interceptor sewers would be placed at sufficient slope to achieve a minimum velocity of 2 feet per second flowing full. The sizing of each gravity sewer line was determined using the Manning's Equation. Manholes were spaced at intervals no greater than 400 feet apart in compliance with the Illinois Recommended Standards. At each manhole, the 0.8 depth points of the influent pipes and the effluent pipes were kept the same. The allowable depth of any portion of the sewer system was kept at a maximum of approximately 20 feet, with the exception of locations where the sewer cuts through a hill. In those cases, the allowable depth was kept below a maximum of 35 feet.

D. PROJECT PHASING

The proposed interceptor sewer system for the area under consideration is shown on Map 5. From Map 5, it can be seen that the proposed sewer system to serve the future development area could be constructed in phases as follows:

During the first phase, the existing Myra Pump Station and forcemain would be replaced with a new pump station and forcemain located as shown on Map 5. The wetwell, forcemain and electrical would be sized for the ultimate future loading determined from the long term development of the entire Facilities Planning Area. In the initial design the pumps would be sized to handle the current loading plus the additional expected loading that would be generated by growth as projected in the City of Urbana's Comprehensive Plan.

Subsequent phases would be completed as warranted by future development. Extension of sewers out from the new pump station would be driven by development as it occurs. Sewer extensions would be completed from the new pump station predominantly by developers, with some expected cost sharing by potential intervening property owners and/or UCSD, as required .

E. FINAL PUMP STATION SIZING, LOCATION & INTERCEPTOR ROUTES

Map A shows the proposed location of the pump station and the proposed routing of the interceptor sewers in the vicinity of the pump station. Note that the interceptor sewers running to the north and south from the pump station have been deflected to go around high spots in order to keep the sewer depths constructible. Map A also shows a shaded 168-acre parcel of land located on the west side of IL Route 130 This area is currently undeveloped, but is part of the land that was recently sold to developers. The District desires to include

this area in the current study. The ultimate peak capacity of the proposed pump station would be increased by 0.79 MGD to accommodate the addition of this area.

Map 5 identifies the subbasins that are part of the ultimate service area out to the Facilities Planning Area Boundary. These subbasin areas, which currently lie outside of the current UCSD service area boundary, would be tributary to the new pump station, and are tabulated below:

Subbasin Number	Area (Acres)
6	1442.6
7	1189.4
8	497.9

Applying the UCSD's 4,700 gallons/acre/day factor to the total tributary area of 3,129.9 acres lying outside of the current service area boundary results in a peak flow of 14.71 MGD. (4700 gpd/acre *3,129.9 acres/1,000,000). The ultimate peak flow of the new Pump Station would consist of this 14.71 MGD peak flow, plus the 0.79 MGD peak flow from the 168-acre parcel lying within the current service area boundary, plus the existing flow from the existing Myra Pump Station.

Note that the 2002 Long Range Facility Plan of the Urbana & Champaign Sanitary District (UCSD) includes a detailed analysis of potentially rerouting approximately 2.5 MGD of flow that currently flows into the existing Myra Pump Station to the Amvet Pump Station. The 2.5 MGD is the discharge from the existing Race Street Pump Station. Due to the configuration of the existing piping, the concept of rerouting Race Street Pump Station discharge to the Amvet Pump Station appears feasible.

The purpose of the flow rerouting would be to free up some capacity of the existing Myra Pump Station. This would provide a potential service connection point for some future development. A conceptual design of the flow rerouting project, including costs, has not been developed. Due to the limited amount of the new east Urbana development area that the existing Myra Pump Station could serve, even with the 2.5 MGD of "freed-up" capacity, the rerouting project has not been included in the scope of the proposed project in this report. The flow rerouting is planned for a future project. As discussed below, the wetwell size of the new pump station is sized based upon the completion of the rerouting project at some future date.

If the flows from the Race Street Pump Station were to be taken off of the existing Myra Pump Station and put into the existing Amvet Pump Station, as was developed in a previous study, then the potential peak flow from the existing Myra Pump Station would be 1.86 MGD [4.82 MGD (design flow of existing Myra Pump Station with one pump out of service – 2.5 MGD (peak inflow in Race Street Pump Station rerouted to Amvet Pump Station)] . The resulting peak flow of the new East Urbana Pump Station would be 17.36 MGD. (14.71 MGD from development of Subbasins 6,7, &8 + .79 MGD from 168-acre parcel + 1.86 MGD from Myra, assuming Race Street Pump Station flow diverted to Amvet).

If the flows from Race Street are not taken off of Myra, then the potential peak flow from the existing Myra Pump Station would be 4.82 MGD. The resulting peak flow of the new East Urbana Pump Station would be 20.32 MGD. (14.71 from development of Subbasins 6,7, &8 + .79 MGD from 168-acre parcel + 4.86 MGD from Myra, (design flow of existing Myra Pump Station with one pump out of service)

Regardless of how the flows from Race Street are handled, the ultimate loading for the new East Urbana Pump Station would not be realized for approximately 50 years. Over the last five years, the UCSD has issued 245 connection permits for new construction. Based on an average of 3.5 housing units per acre, this translates into approximately 70 acres of new development per year. At this rate, over the next 20 years (the design life of the project), there would be approximately 1400 acres of new development. Applying the UCSD's factor of 4700 gallons/acre/day yields a 20 year peak flow of 6.58 MGD from the new development areas.

Except for the 168-acre parcel on the west side of IL Route 130, the majority of the initial development is expected to occur east of IL Route 130 in the near future. The Myra Pump Station would have to be relocated in order to serve these areas. Because of the timing of the expected development, switching the Race Street flow from Myra to Amvet probably would not occur before Myra needs to be relocated. Therefore the initial peak flow of the new East Urbana Pump Station would be 4.82 MGD (the existing capacity of the existing Myra Station) plus 0.79 MGD from the 168-acre parcel, for a total peak flow of 5.61 MGD. Adding in the 6.58 MGD flow from the 20-year growth area results in a design year peak flow of 12.19 MGD.

At some point, the flow from Race Street will be taken off of Myra and put into Amvet, so the ultimate peak flow into the new East Urbana Pump Station would be 17.36 MGD. The wetwell and forcemain should be sized to handle this peak flow, but the pumps should be sized to only handle the 20-year design flow. Provisions should be made to either add more pumps in the future or replace the pumps to be able to handle the ultimate loading.

Considering that the average flow from the existing Myra pump Station is 1.53 MGD and the 20-year peak design flow is 12.19 MGD, there is a wide range of flows that need to be considered in the design of the relocated Myra Pump Station.

F. ALTERNATE FORCEMAIN ROUTES

Map A shows five potential forcemain routing options that were identified and initially screened based upon general criteria such as: ease of construction, conflicts with existing utilities, availability of easements, and impact on future development.

Forcemain Option #1 would head east out of the valve vault to Cottonwood Drive and then would run north along Cottonwood Drive to the railroad right-of-way. At this point, the forcemain would head west along the railroad right-of-way to a point just south of the treatment plant. The forcemain would turn and run north through private property on a private easement and then would cross under US Route 150. The forcemain would then run

through Woodland Park to the Northeast Treatment Plant. Forcemain Option #1 may lead to potential conflicts in the future as the areas upstream develop and gravity sewers are built which may cross the forcemain alignment. Also, Forcemain Option #1 would require a longer length of forcemain to be built than the other options, which would ultimately result in a higher cost. Therefore, Forcemain Option #1 will not be considered further.

Forcemain Option #2 would head west out of the valve vault to a point on the east side of IL Route 130 and then would run north along IL Route 130 on private easement adjacent to IDOT right-of-way to a point just north of the future extension of Florida Avenue. At this point, the forcemain would cross under IL Route 130 and would run west along the north side of Florida Avenue extended, either on the road R-O-W or on private easement to a point just east of Abercorn Street. The forcemain would then run north on private easement, to a point just south of Washington Street. The forcemain would then run west along the south side of Washington Street to a point just west of Dodson Drive. The forcemain would then turn north and run in the Baker's Lane right-of-way to Main Street. The forcemain would then run west under the pavement on Main Street to Smith Road, at which point the forcemain would turn and run north under the pavement on Smith Road to the railroad right-of-way. At this point, the forcemain would head west along the railroad right-of-way to a point just south of the treatment plant. The forcemain would turn and run north through private property on a private easement and then would cross under US Route 150. The forcemain would then run through Woodland Park to the Northeast Treatment Plant. At this point in time, Forcemain Option #2 is a viable option that merits further consideration.

Forcemain Option #3 would head west out of the valve vault to a point on the east side of IL Route 130 and then would run north along IL Route 130 on private easement adjacent to IDOT right-of-way to a point lying within the railroad right-of-way. At this point, the forcemain would head west along the railroad right-of-way to a point just south of the treatment plant. The forcemain would turn and run north through private property on a private easement and then would cross under US Route 150. The forcemain would then run through Woodland Park to the Northeast Treatment Plant. At this point in time, Forcemain Option #3 is a viable option that merits further consideration.

Forcemain Option #4 would consist of two parallel forcemains. Since the short-term pump station capacity would be approximately equal to the existing pump station capacity, the existing forcemain could be reused and extended from the existing pump station to the proposed pump station. This portion of forcemain would head west out of the proposed valve vault and cross under IL Route 130 and would connect to the existing 16" forcemain on the west side of IL Route 130. The existing forcemain shown on Map A would continue to be utilized and would also continue to discharge into the manhole located at the intersection of Smith Road and US Route 150. A second forcemain would be constructed as part of this project that would run parallel to the existing forcemain to the intersection of Smith Road and US Route 150. This second forcemain would then head west along the railroad right-of-way to a point just south of the treatment plant. The forcemain would turn and run north through private property on a private easement and then would cross under US Route 150. The forcemain would then run through Woodland Park to the Northeast

Treatment Plant. At this point in time, Forcemain Option #4 is a viable option that merits further consideration.

Forcemain Option #5 would head north out of the valve vault through private property on a private easement to the railroad right-of-way. At this point, the forcemain would head west along the railroad right-of-way to a point just south of the treatment plant. The forcemain would turn and run north through private property on a private easement and then would cross under US Route 150. The forcemain would then run through Woodland Park to the Northeast Treatment Plant. Forcemain Option #5 may lead to potential conflicts in the future as the areas upstream develop and gravity sewers are built which may cross the forcemain alignment. Therefore, Forcemain Option #5 will not be considered further.

G. PRELIMINARY SIZING & FORCEMAIN ROUTE SELECTION

Of the five potential forcemain routes explored, only three of them are viable options. Preliminary pump station calculations were performed to roughly determine the sizes of the forcemains and the sizes of the pumps that would be required for each of the three forcemain options.

Since the lengths of Forcemain Option #2 and Forcemain Option #3 are essentially the same, the size of the forcemain would also be the same and the pump station configuration would be similar for both cases. Preliminary calculations were performed for three different pump station configurations. Each configuration would meet the ultimate flow condition with one installed spare pump. The results of the preliminary calculations for these two forcemain routing options are tabulated below:

Forcemain Size	# Pumps (Ultimate Flow)	# Pumps (20-year Design Flow)
30”	3 - 250 Hp pumps with 1 spare	2 -185 Hp pumps with 1 spare
36”	3 - 185 Hp pumps with 1 spare	2 - 160 Hp pumps with 1 spare

The table shows that the forcemain could be either 30” or 36” diameter. The pumps would need to have more powerful motors with the smaller forcemain size. In either case, the preliminary calculations showed that a quadruplex pump station arrangement would be required to satisfy the future loading condition, but only a triplex pump arrangement would be required to satisfy the 20-year design loading condition. The preliminary calculations also indicated that it may be possible to satisfy the 20-year loading condition with the same pumps required for the ultimate loading condition by providing either variable frequency drivers or two-speed motors. This possibility would need to be investigated further during detailed design.

A present worth cost comparison of the annual operations and maintenance costs associated with the ultimate flow condition for these forcemain and pump combinations will be used to help determine whether a 30” or 36” forcemain should be selected. In order to perform this analysis, some basic assumptions were made. First, it was assumed that the cost of the pump station equipment and controls would be approximately equal for both cases. Second,

it was assumed that three pumps would be in operation at a given time and that the pump station would run for 6 hours per day. Third, it was assumed that the interest rate was 5% over a 20-year term in order to convert the annual operations and maintenance costs to a present worth. The annual operations and maintenance costs as well as the present worth costs for the 30" and 36" forcemains are calculated below:

For the 30" Forcemain:

Annual O&M Cost = (3 pumps)(250 Hp/pump)(6 Hrs/day)(365 days/year)(0.7457 kW/Hp)($0.07/kW-Hr)

Annual O&M Cost = $85,736.86 per year

Present Worth Cost = (Annual O&M Cost)$(P/A)^{5\%}_{20}$

Present Worth Cost = ($85,736.86)(12.462)

Present Worth Cost = $1,068,452.75

For the 36" Forcemain:

Annual O&M Cost = (3 pumps)(185 Hp/pump)(6 Hrs/day)(365 days/year)(0.7457 kW/Hp)($0.07/kW-Hr)

Annual O&M Cost = $63,445.27 per year

Present Worth Cost = (Annual O&M Cost)$(P/A)^{5\%}_{20}$

Present Worth Cost = ($63,445.27)(12.462)

Present Worth Cost = $790,654.95

From the above calculations, it can be seen that the present worth for the 36" forcemain option is $277,797.80 less than the present worth for the 30" forcemain option. Based on a preliminary forcemain length of 19,250 feet, this cost difference can be expressed as $14.43 per foot of forcemain. Since the installation cost for either a 30" or 36" diameter pipe is approximately the same, the present worth cost comparison indicates that the 36" forcemain should be selected over the 30" forcemain if the pipe price difference between the 36" and 30" sizes is less than $14.43 per foot. Preliminary PVC and Ductile Iron pipe prices were obtained, and these prices indicate that the 36" PVC pipe currently costs $55.00 more per foot than the 30" PVC pipe and the 36" Ductile Iron Pipe currently costs $35.00 more per foot than the 30" Ductile Iron pipe. Therefore, the 30" forcemain should be selected based on the ultimate flow condition.

The above calculations were based on the ultimate flow condition because this case had the biggest difference in pump horsepower for the 30" and 36" forcemains. For the 20-year design flow, the difference in pump horsepower for the 30" and 36" forcemains is much less. The result would be a value much less than the $14.43 used for comparison, and would still lead to the selection of the 30" forcemain.

Besides the cost of the forcemain, another major consideration is the flow velocity through the forcemain during the initial development period. Based on preliminary calculations for the 36" forcemain, it was discovered that a significant amount of flow is required in order to maintain the minimum scour velocity of 2.0 feet per second in the forcemain. The required flow would be about twice the current peak flow from the existing Myra Pump Station. Since this magnitude of flow would not be generated during the initial development phase, this would require the pumps to be turned on and off several times during the day. Having several pump starts with pumps this large is a problem. For this reason, the 36" forcemain should not be selected.

The preliminary calculations for the 30" forcemain showed that a flow approximately equal to 1.3 times the current peak flow from the existing Myra Pump Station would need to be provided in order to maintain the minimum scour velocity of 2.0 feet per second in the forcemain. This amount of flow may be attainable, depending on the amount of initial development. If the 168-acre parcel on the west side of IL Route 130 was developed along with another area of equal size (or greater), and the Race Street flow was left tributary to Myra Pump Station (at least initially until further development occurred), then the required minimum scour velocity could be attained during peak flow conditions, but not during average flow conditions. Although this initial situation is not ideal, the situation would improve over time as more development adds more flow to the pump station. Alternatively, the pump controls could be used to run two pumps simultaneously on a scheduled basis, to increase flow in the force main and achieve scouring velocities.

Map B shows the forcemain routes for Forcemain Option #2/#4 and Forcemain Option #3 along with the current property boundaries. From Map B, it can be seen that Forcemain Option #2/#4 would require 8 easements, while Forcemain Option #3 would require 10 easements. Map B shows that there are 8 landowners in common between the two possible routes. Also, three of these landowners would also be approached regarding the easement for the 36" diameter gravity sewer from the existing pump station to the proposed pump station. The landowners that are not common to both routes are listed below:

Forcemain Option #2	**Forcemain Option #3**
1 Owner along Washington Street	Highcross LLC
	Wal-Mart Stores, Inc.

Forcemain Option #3 would involve obtaining an easement in front of the new Super Wal-Mart store and from Highcross LLC, while Forcemain Option #2 or #4 would involve obtaining easements from one landowner along Washington Street. It is expected that the easements for Forcemain Option #2 or #4 would be easier to obtain. Forcemain Option #3 would involve a much longer portion of forcemain being installed along the railroad right-of-way as compared to Forcemain Option #2 or #4, and would therefore result in a more costly license agreement with the railroad. For these reasons, Forcemain Option #2 or #4 should be selected, and Forcemain Option #3 will not be considered further.

H. RANGE OF FLOWS

As was stated in the previous section, the flows generated by the initial development may not be sufficient to maintain a minimum scour velocity of 2.0 feet per second in the 30" forcemain. For this reason, Forcemain Option #4 was developed. Forcemain Option #4 would utilize the existing forcemain from the existing Myra Pump Station to handle the low flows and would also utilize a new 30" forcemain, which would run along the route of Forcemain Option #2, in conjunction with the existing forcemain to handle the higher flows. The existing forcemain is comprised of sections of 14" and 16" pipe. This forcemain would be extended from the location of the existing pump station to the location of the proposed pump station with 16" pipe. The existing discharge point of the existing forcemain would be maintained, as is indicated on Map A.

The pump station configuration in this case would be much different than the traditional configuration which would have been utilized for Forcemain Option #2. Since there would be two parallel forcemains of different lengths and sizes employed in Forcemain Option #4, the pump station would have two sets of pumps, with each set of pumps having its own dedicated forcemain. Figure 1 shows a schematic representation of this configuration. Preliminary calculations were performed for two pump configurations, with different low flow conditions. Low Flow Condition 'A' assumed a low flow pump capacity of 1,250 gallons per minute (GPM). This flow rate is comparable to the existing average flow condition at the existing Myra Pump Station. Low Flow Condition 'B' assumed a low flow pump capacity of 2,000 GPM, which is based upon the anticipated pump capacity for each pump in the "20-year Design Flow" scenario. Based on the low flow capacity, pumps were sized for the 20-year flow and the ultimate flow. The results of these preliminary calculations are tabulated below:

For Low Flow Condition 'A'

Low Flow 'A' (1250 GPM)

Forcemain Size	# Pumps	Horsepower per pump
16"	1 with 1 spare	50

20-year Design Flow (8500 GPM)

Forcemain Size	# Pumps	Horsepower per pump
16"	1 with 1 spare	50
30"	2 with 1 spare	185

Ultimate Design Flow (12150 GPM)

Forcemain Size	# Pumps	Horsepower per pump
16"	1 with 1 spare	50
30"	3 with 1 spare	185

For Low Flow Condition 'B'

Low Flow 'B' (2000 GPM)

Forcemain Size	# Pumps	Horsepower per pump
16"	1 with 1 spare	90

20-year Design Flow (8500 GPM)

Forcemain Size	# Pumps	Horsepower per pump
16"	1 with 1 spare	90
30"	2 with 1 spare	110

Ultimate Design Flow (12150 GPM)

Forcemain Size	# Pumps	Horsepower per pump
16"	1 with 1 spare	90
30"	3 with 1 spare	160

The above tables indicate that, in either case, two pumps would be required to handle the low flow, 5 pumps would be required to handle the 20-year design flow, and 6 pumps would be required to handle the ultimate flow. A comparison of the pump motor sizes required for Low Flow Condition 'A' and Low Flow Condition 'B' shows that more horsepower would be required for Low Flow Condition 'A' for both the 20-year and ultimate flows. Because of this, Low Flow Condition 'B' should be selected over Low Flow Condition 'A'.

Comparing the pump motor sizes for Low Flow Condition 'B' to those previously stated for Forcemain Option #2 shows that Forcemain Option #2 would require 370 horsepower for the 20-year design flow while Low Flow Condition 'B' would require 310 horsepower, and that Forcemain Option #2 would require 750 horsepower for the ultimate design flow while Low Flow Condition 'B' would require 570 horsepower. Based on these differences, it can be seen that Forcemain Option #4 with Low Flow Condition 'B' would result in lower operations and maintenance costs than Forcemain Option #2.

Although Forcemain Option #4 would require a more complicated pump station design and an additional length of 16" forcemain as compared to Forcemain Option #2, these additional costs are not expected to be insurmountable when compared to the entire scope of the project. In addition, Forcemain Option #2 may have problems maintaining a minimum scour velocity during the initial stages of development. For these reasons, Forcemain Option #4 with Low Flow Condition 'B' should be selected over Forcemain Option #2.

The preliminary calculations for Low Flow Condition 'B' also indicated that it may be possible to utilize either the 20-year design pumps or the ultimate design pumps with variable frequency drivers to meet the low flow condition because the required pump sizes

for each flow condition are close, 90 Hp versus 110 Hp and 90 Hp versus 160 Hp. If this could be done, then the total number of pumps required could be reduced by one in each case. In order to accomplish this, the two forcemains would be interconnected near the valve vault and two independent electrically-operated valves would be provided to direct the flow into the existing 16" forcemain, the new 30" forcemain, or both, depending on the amount of flow being pumped. Figure 2 shows a schematic representation of this configuration. The following tables summarize the preliminary operational scheme based on the preliminary calculations:

20-year pumps (110 Hp) – 4 Total

Number of Pumps in Operation	Flow Range (GPM)	Forcemain(s) Used
1 - 2	2000 - 2800	Existing 16"
2	4400* - 6500	New 30"
3	6500 - 8500	Both
4	8500 +	Both

Ultimate pumps (160 Hp) – 5 Total

Number of Pumps in Operation	Flow Range (GPM)	Forcemain(s) Used
1 - 2	2000 - 3200	Existing 16"
1 – 3**	4400* - 10150	New 30"
2 – 4**	6500 - 12150	Both
5	12150 +	Both

* 4400 GPM is the minimum flow required to maintain 2 fps scour velocity in the 30" forcemain.

** The overlap in flow range can be attributed to how the flow could be discharged. The information tabulated is intended to show the available possibilities based on the preliminary calculations and combinations of number of pumps and forcemains. During detailed design, this overlap may be eliminated.

Based on the preliminary calculations, it appears that it would be possible to utilize fewer pumps, however, the concept of using either the ultimate pumps or the 20-year design pumps with variable frequency drivers would need to be considered further during detailed design, and the information presented in the above tables would also need to be verified during detailed design. Also, the above tables were based on using submersible pumps, but consideration should also be given to using dry pit pumps during detailed design due to the relatively large size of the pumps and the potential use of electrically-operated valves on the pump discharge piping.

I. ALTERNATE PUMP STATION CONFIGURATIONS

According to Part 370.c.2.B of the Illinois Recommended Standards for Sewage Works, bar racks or screens are required to protect pumps handling separate sanitary sewage from 30 inch or larger diameter sewers. From Map A, it can be seen that at least two of the interceptor sewers immediately upstream of the pump station would be 30" diameter sewers or larger. Since bar racks or screens would be required in any case, Figures 3 through 6 were developed to show alternative configurations for the pump station.

Figure 3 depicts the 30" and 36" sewers coming together into a bar screen structure with a 42" sewer running from the structure to the wet well. Figure 3 also depicts two 21" sewers entering the wet well directly. Although this scenario would satisfy the IEPA's requirements, it may not be the best alternative. Since bar racks or screens would be required because of the 30" and 36" sewers, it may be more beneficial to provide bar racks or screens for all of the flow entering the pump station, not just the flow coming from sewers 30" and larger. For this reason, the pump station configuration shown on Figure 3 will not be considered further.

Figure 4 depicts a somewhat different scenario than Figure 3. In Figure 4, the 30" and 36" sewers converge at a manhole just upstream to the west of the pump station, and the two 21" sewers likewise converge at a manhole just upstream to the east of the pump station. There would be one sewer running from each upstream manhole to the pump station. The pump station would be arranged so that both of these influent sewers would enter an auxiliary wet well which could be used for additional storage and would also house the bar racks or screens. Figure 4 depicts one 54" sewer connecting this auxiliary wet well/ bar screen structure to the main wet well where the pumps would be located. In this scenario, one large bar rack or screen would be required for the single 54" effluent pipe. Because only one large bar rack or screen would be provided, there may be problems associated with maintaining the single unit. For this reason, the scenario depicted in Figure 4 would not be considered further.

Figures 5 and 6 depict the same basic arrangement as Figure 4, but with more sewers connecting the auxiliary wet well to the main wet well. Figure 5 shows two 36" pipes, while Figure 6 shows three 30" pipes. Figure 5 would require two bar racks or screens, while Figure 6 would require three bar racks or screens. Either scenario would offer greater flexibility in maintenance as compared to having only one unit. It is expected that the added cost of providing and maintaining the third bar rack or screen would far outweigh its benefits. Therefore, the scenario depicted in Figure 5 should be selected. Two mechanically-cleaned bar screens are recommended, versus manually-cleaned bar screens, to reduce maintenance costs.

J. EASEMENT REQUIREMENTS

Where a proposed interceptor sewer routing would be located on private property, it would be necessary to obtain permanent and temporary easements under the provisions of UCSD Ordinance No. 494. It is estimated that a 40-foot wide permanent easement and a 60-foot wide temporary easement would be required for relatively deep large diameter gravity interceptor sewers (21" diameter and over). This is the same configuration that was

previously used for Phases I and II of the Curtis/Windsor Interceptor, the Kauffmann-Shurtz Interceptor Extension, and also for Phase I and Phase II of the Northwest Interceptor Sewer. However, where sewer routing can be aligned with street right-of-way, these easement widths can be modified to accommodate development plans so long as there is sufficient room available for sewer construction.

For smaller diameter gravity interceptor sewers (under 21" diameter) which are typically at shallower depths since they are located at the upper end of the interceptor, it is estimated that a 30-foot wide permanent easement and a 40-foot wide temporary easement would be required. It is also estimated that a 15-foot wide permanent easement and a 20-foot wide temporary easement would be required for forcemains. This is the same configuration that has been used on numerous past projects. Where these easements can also be combined with a right-of-way, the easement widths can be reduced as mentioned in the preceding paragraph.

For the purposes of this study, it was assumed that easements would be required for the entire length of the interceptor sewers. To estimate the cost of easement acquisition, it was assumed that the land value was $15,000 per acre, and that 50% of the land value would be paid for permanent easements and 25% of the land value would be paid for temporary easements. These expenses can be expressed as a cost per unit length as follows:

Interceptor Sewer 21" diameter and over:

Permanent Easement Cost = ($15,000 per acre x 40 foot width x 0.50) / (43,560 SF per acre)
= $6.89 per LF

Temporary Easement Cost = ($15,000 per acre x 60 foot width x 0.25) / (43,560 SF per acre)
= $5.16 per LF

Interceptor Sewer under 21" diameter:

Permanent Easement Cost = ($15,000 per acre x 30 foot width x 0.50) / (43,560 SF per acre)
= $5.16 per LF

Temporary Easement Cost = ($15,000 per acre x 40 foot width x 0.25) / (43,560 SF per acre)
= $3.44 per LF

Forcemain:

Permanent Easement Cost = ($15,000 per acre x 15 foot width x 0.50) / (43,560 SF per acre)
= $2.58 per LF

Temporary Easement Cost = ($15,000 per acre x 20 foot width x 0.25) / (43,560 SF per acre)
= $1.72 per LF

K. OVERSIZING COSTS

It has been the policy of UCSD, under the provisions of UCSD Ordinance No. 494, that developers of land parcels are responsible for constructing any interceptor sewers across their parcels. That policy maintains that the developer is solely responsible for the cost of the sewer necessary to serve the developer's property. UCSD's current policy stipulates that UCSD's cost participation in the interceptor project would be limited to paying for the incremental construction costs associated with additional depth and size necessary to serve additional property beyond that of the developer.

Since the majority of the proposed project is being driven by development, the UCSD would only be responsible for the costs associated with conveying the flows generated by areas of land that lie within the current service area boundary. In this case, these areas would be the 168-acre parcel shown on Map A in addition to the flow coming from the Myra Pump Station. Therefore, the UCSD would only be responsible for the costs associated with the 36" diameter gravity sewer plus a percentage of the cost of the new pump station and forcemain. The UCSD's percentage share of the pump station and forcemain cost was determined based on the proportion of the flow generated from the areas described above as compared to the 20-year design flow of 12.19 MGD. The flow from the Myra Pump Station is 4.82 MGD, and the predicted flow from the 168-acre parcel is 0.79 MGD. Adding these two flows together yields 5.61 MGD, the UCSD's flow contribution to the pump station. Based on the preliminary cost estimate, the UCSD cost would be $796,437.90 for the 36" gravity sewer plus $3,095,875.64 for its share of the pump station and forcemain, for a total of **$3,892,313.54**.

L. DEVELOPER COLLECTOR SEWERS

In this case, the City of Urbana is acting as the initial developer, and as such, the City of Urbana would be responsible for the costs associated with conveying the flows generated by areas of land that lie outside of the current service area boundary. These areas are subbasins 6, 7, and 8 as shown on Map 5. Since the proposed project includes the construction of the new pump station, forcemain, and the initial sewer stubs that would eventually be extended to serve future development, the City of Urbana would be responsible for the cost of the 30" and 21" diameter sewer stubs plus a percentage of the cost of the new pump station and forcemain. The City's percentage share of the pump station and forcemain cost was determined based on the proportion of the flow generated from the areas described above as compared to the 20-year design flow of 12.19 MGD. In Section E of this report, a 20-year development flow of 6.58 MGD was determined, and this would be the City of Urbana's flow contribution to the new pump station. Based on the preliminary cost estimate, the City of Urbana's cost would be $303,172.20 for the 21" and 30" gravity sewers plus $3,631,169.64 for its share of the pump station and forcemain, for a total of **$3,934,341.84**.

M. DEVELOPER COST RECOVERY

The City of Urbana may choose to recover its cost from the areas that would benefit from this project. The per-acre cost of the City's investment in this project would be $3,934,341.84 divided by 3,129.9 acres, which yields **$1,257.02** per acre.

Subbasin Number	Area (Acres)
6	1442.6
7	1189.4
8	497.9

N. UCSD COST RECOVERY

The UCSD would recover its share of the project costs through the UCSD Interceptor Cost Recovery Fee, which was established under UCSD Ordinance No. 591. The Interceptor Cost Recovery Fee would be paid to the District by the developers at the time a sanitary sewer connection permit is submitted for approval. Adding the additional debt retirement cost from this project may require the UCSD to raise the Interceptor Cost Recovery Fee.

O. PROJECT TIMETABLE

The anticipated project timetable is as follows:

ITEM	ANTICIPATED COMPLETION DATE
1. IEPA Approved Facilities Plan Start	November, 2006
2. Plans and Specifications Complete	April, 2007
3. IEPA Permitting	June, 2007
4. Easements	June, 2007
5. IEPA Loan Approval	September, 2007
6. Bid Advertisement	October, 2007
7. Contract Award	January, 2008
8. Start Construction	March, 2008
9. Project Close Out	August, 2009

P. ENVIRONMENTAL & SECONDARY IMPACTS

The interceptor and forcemain routings presented in this report pass through undeveloped farmland as well as developed urban areas. During construction on undeveloped farmland, the topsoil would be stripped and stockpiled. At the end of the construction, the land would be returned to tillable ground. No long-term and significant environmental impacts are expected. However, IDNR sign-offs regarding endangered species and wetlands would be obtained. A Phase I Archaeological Survey of the area would also be performed as part of this project, and a sign-off from the Illinois Historic Preservation Agency would also be obtained. Since there would be one creek crossing for the interceptor entering the pump station from the south, the Army Corps of Engineers sign-off and the IDNR Rivers and Streams sign-off would be obtained as well.

Since the interceptor and forcemain routings pass through farmland and the land would be returned to tillable ground after construction, there are no short-term secondary impacts. However, farmland within the proposed service area would eventually be transformed into residential, commercial, and industrial developments over time.

Q. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This report builds upon the recommendations from the 2002 Long Range Facility Plan of the Urbana & Champaign Sanitary District (UCSD). Five forcemain routing options were evaluated. Of the five options presented, only three were determined to be viable options. Forcemain Option #2 and Forcemain Option #3 involve the construction of one new forcemain from the new East Urbana Pump Station location to the Northeast Treatment Plant. Forcemain Option #4 involves re-using the existing forcemain and constructing an additional forcemain.

The current report compared Forcemain Option #2 to Forcemain Option #3 and discovered that Forcemain Option #2 had distinct advantages over Forcemain Option #3 with regard to

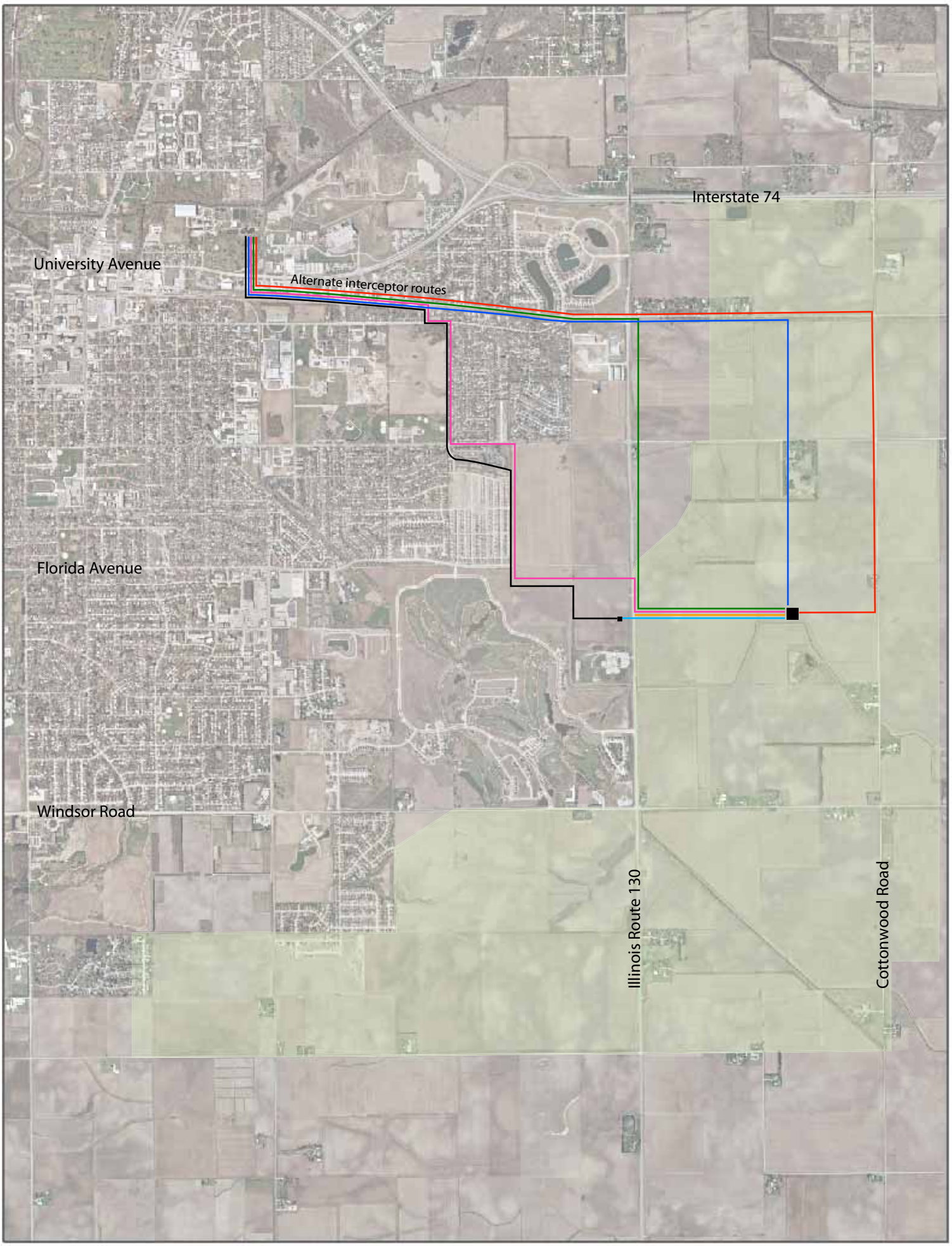
costs and ease of obtaining easements. This report also determined that a 30" diameter forcemain should be installed. The report also considered the range of flows that would be tributary to the new pump station from the initial development stage through the 20-year projected design life, and up to the ultimate design flow where the entire designated service area was completely developed.

Based on this information, it was discovered that Forcemain Option #2 would not be able to maintain a minimum scour velocity of 2 feet per second during the initial development stages. Because of this, Forcemain Option #4 is recommended. The existing forcemain should be extended to the new pump station location and a new 30" forcemain should be constructed along the routing of Forcemain Option #2. Based on preliminary data, it appears that there may be some advantages in interconnecting the two forcemains, but the actual configuration would need to be determined during detailed design.

According to the IEPA guidelines, bar racks or screens must be provided for the pump station because the influent sewers are larger than 30 inches in diameter. Four pump station configurations were presented to meet the IEPA requirement. The configuration that utilizes two mechanically-cleaned bar screens is recommended because this configuration would be the most cost-effective way to offer flexibility during maintenance operations.

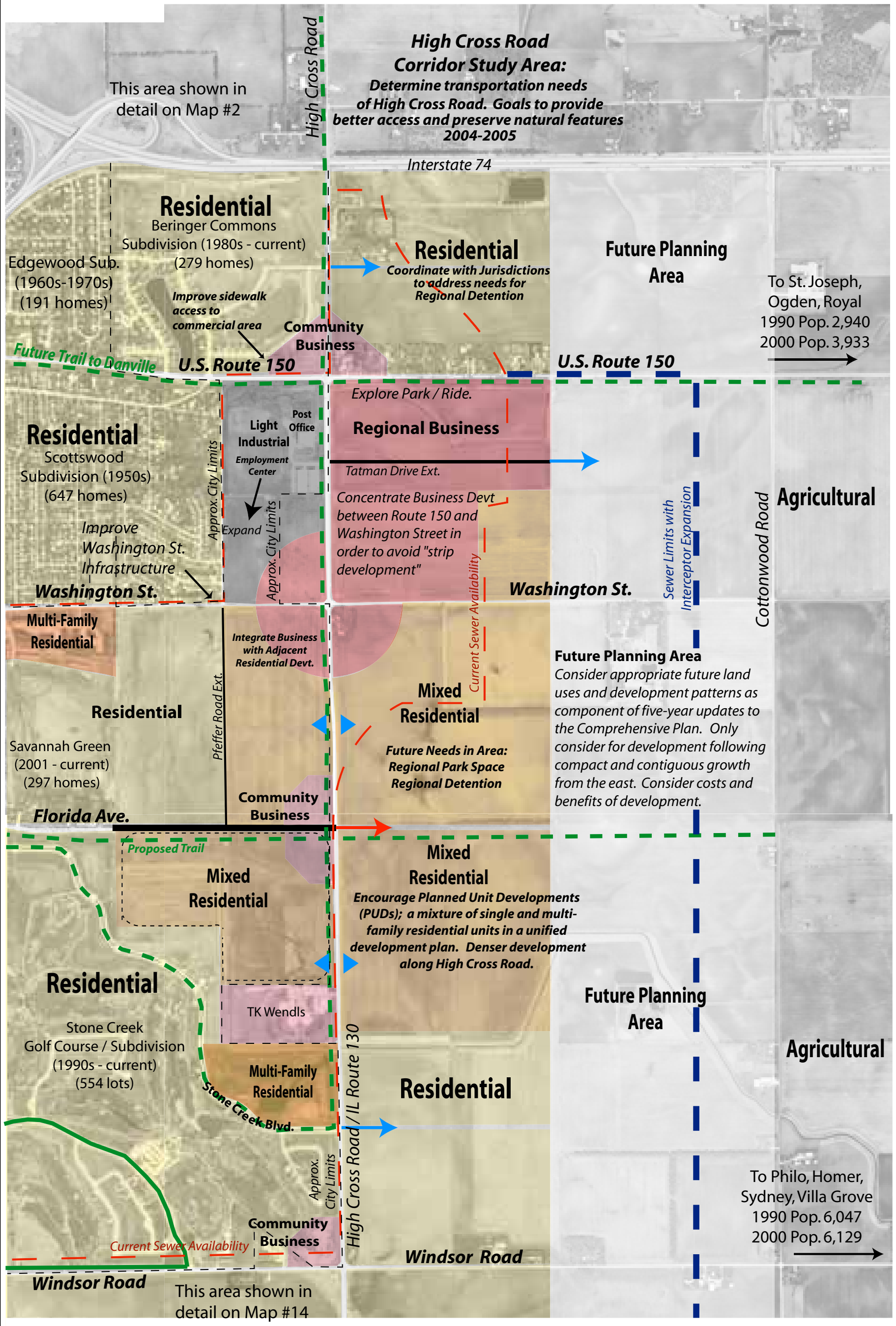
Based on preliminary pump selections, the required pump motor sizes would result in very large pump controls costs (including variable frequency drivers) and back-up power costs. Pump sizing and configuration need to be more thoroughly evaluated during final design to optimize efficiency and power consumption over the life of the pump station. The methods of providing back-up power, and their associated costs, would require further study during the detailed design phase of this project.

Figure 1: East Urbana Interceptor Service Area*



* Service area shown in green. Boundaries and routing are approximate until final system design completed

Future Land Use Maps
Map #7



ADOPTED

April 11, 2005

Map Created by City of Urbana Community Development Services Dept.

Access Management on High Cross Road

Direction and approximate location. The exact location of roadways and/or right-of-way dedication depends on a variety of factors.

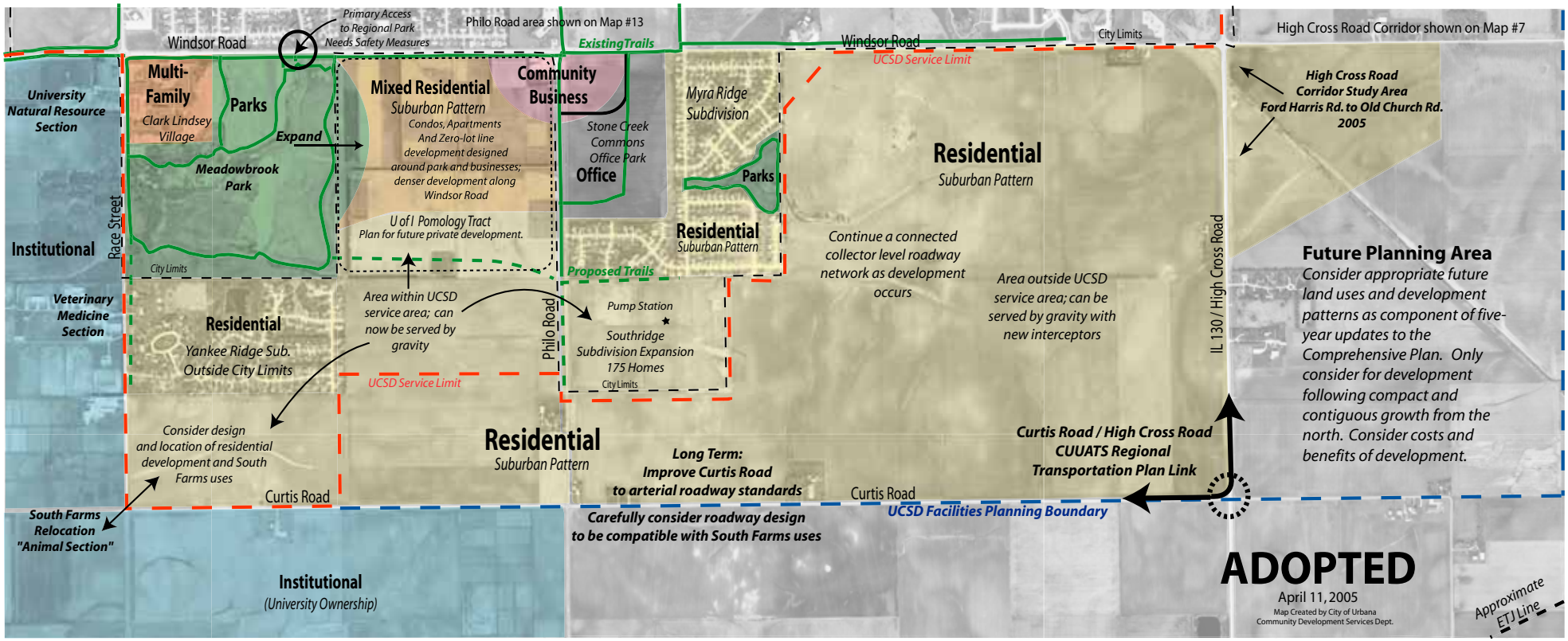
Pre-determined location for extension The desired location of roadways and/or right-of-way dedication is known though further study is required to determine the final design.

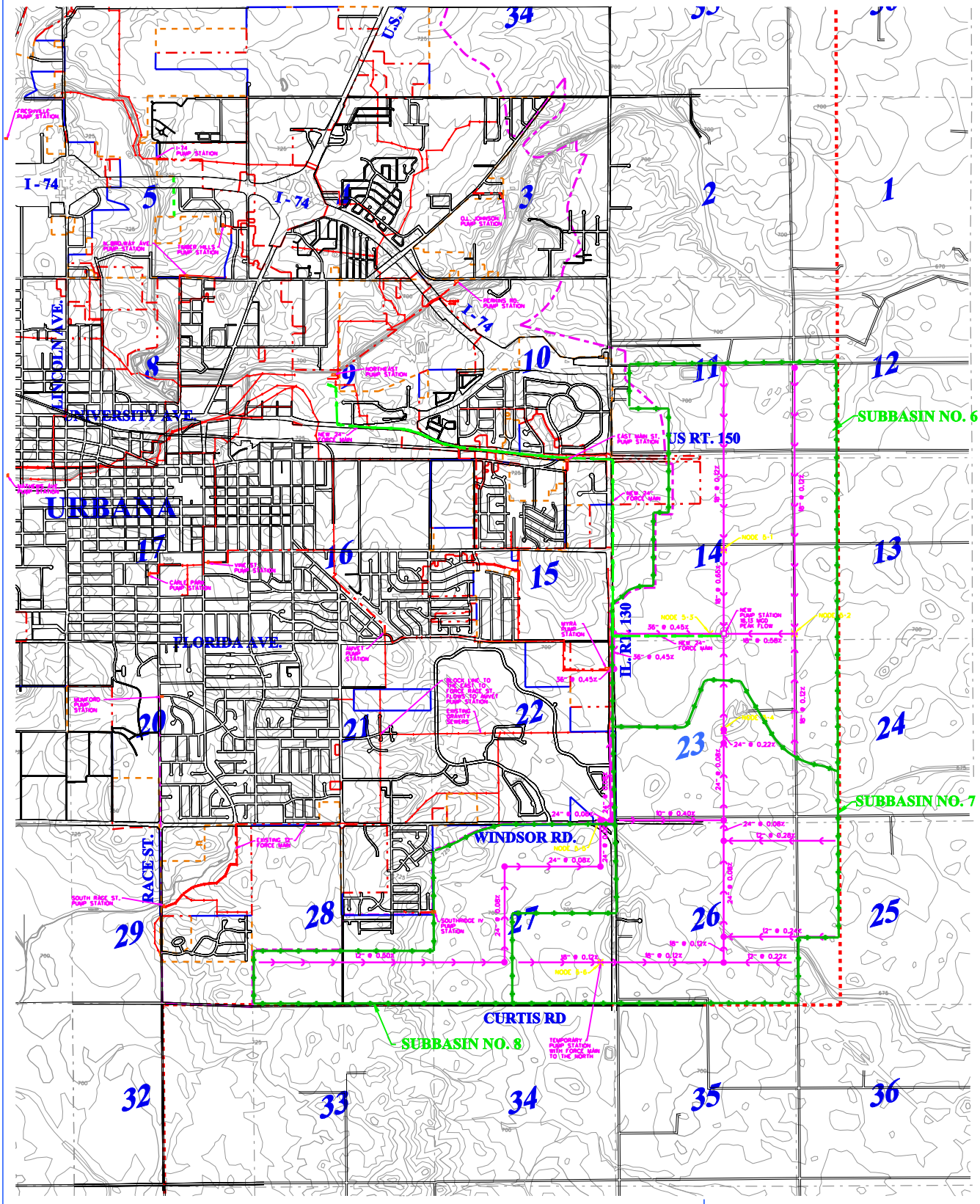
Note: See Appendix "D"; Mobility Map

High Cross Road Corridor

Future Land Use Maps
Map #14

South Urbana





LEGEND

URBANA & CHAMPAIGN SANITARY DISTRICT

DISTRICT BOUNDARIES AND SERVICE AREA MAP

LONG RANGE FACILITY PLAN
URBANA & CHAMPAIGN SANITARY DISTRICT

MAP 5:
EAST URBANA INTERCEPTOR

SCALE: 1" = 1000'

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OCTOBER 30, 2008

MINUTES OF A RESCHEDULED REGULAR MEETING

URBANA PLAN COMMISSION **DRAFT**

DATE: **November 16, 2006**

TIME: **7:30 P.M.**

PLACE: **Urbana City Building**
400 South Vine Street
Urbana, IL 61801

MEMBERS PRESENT: Ben Grosser, Lew Hopkins, Michael Pollock, Bernadine Stake, Marilyn Upah-Bant, James Ward

MEMBERS EXCUSED: Jane Burris, Don White

STAFF PRESENT: Gale Jamison, Assistant City Engineer; Elizabeth Tyler, Director of Community Development Services Department; Tom Carrino, Economic Development Manager; Robert Myers, Planning Manager; Teri Andel, Planning Secretary

OTHERS PRESENT: Ralph Langenheim, Susan Taylor

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1. CALL TO ORDER, ROLL CALL AND DECLARATION OF QUORUM

The meeting was called to order at 7:30 p.m., the roll call was taken, and a quorum was declared present.

2. CHANGES TO THE AGENDA

Robert Myers, Planning Manager, requested that an Update of the Comprehensive Plan be added onto the Staff Report section of the agenda. The Plan Commission agreed.

3. APPROVAL OF MINUTES

Ms. Stake moved to approve the minutes from the September 7, 2006 Plan Commission meeting as presented. Ms. Upah-Bant seconded the motion. The minutes were approved as presented by unanimous vote.

4. WRITTEN COMMUNICATIONS

- Unofficial Notes from the October 23, 2006 Committee of the Whole Meeting regarding the 2005 Comprehensive Plan Update

- Copy of the corrected legal notice for the future Plan Case No. 2020-T-06, Planned Unit Text Amendment, that will be reviewed at the November 30, 2006 Plan Commission meeting.
- Planning Commissioner's Journal – Fall 2006

5. CONTINUED PUBLIC HEARINGS

There were none.

6. OLD BUSINESS

There was none.

7. NEW PUBLIC HEARINGS

There were none.

8. NEW BUSINESS

Report on East Urbana Sewer Interceptor Engineering Study

Mr. Myers presented this case to the Plan Commission. He began introducing the case by explaining that the Mayor has asked that the Plan Commission review and provide feedback on the sewer infrastructure project being proposed as part of the East Urbana Sewer Interceptor Engineering Study.

Ms. Stake inquired about the treatment process. Mr. Myers replied that the solids are separated out and dried and typically sent to a landfill. Gale Jamison, Assistant City Engineer, continued by explaining that the dried solids are farm applied, and the liquid that results from the treatment is discharged into the Saline Branch, which runs east of the City of Urbana.

Mr. Jamison continued by saying that the very early planning stage several years ago actually showed a wastewater treatment facility to be located somewhere east of Urbana. Because of the improvements that were made to the northeast plant and the added capacity that has been gained there, there is no longer a need to build a much more expensive wastewater treatment facility. The Urbana-Champaign Sanitary District (UCSD) is only proposing a new lift-station to pump the sewage to where the capacity of treatment currently is.

Mr. Myers continued with a detailed explanation of the planning implications for constructing a new sewer interceptor in East Urbana. He showed a map of the drainage basin that would be served by the proposed East Urbana interceptor and indicated that although this was the basin which could be served, but building the interceptor would not automatically make the entire drainage basin immediately available for development. He reviewed the report in terms of official development policies, specifically the goals and objectives of the 2005 Comprehensive Plan. The Comprehensive Plan anticipates the project and has several major goals and objectives which would be carried out by construction of the East Side Interceptor. He concluded his presentation by noting that this project would need to be approved by the City Council and that

the Mayor has requested input from the Plan Commission on the planning and development implications for the project.

Elizabeth Tyler, Director of Community Development Services, mentioned that the City and UCSD estimate that the project may take up to five years to complete and that this was an exercise of looking ahead. She noted that when looking at maps where new development can currently be served by sewer, the City would be seeing much of the remaining developable land on Future Land Use Map 7 come on line with Menard's development of more than 300 acres. So, for purposes of planning ahead, the City has essentially reached our limit for sewer service.

She pointed out that Urbana has some significant limits to growth. Stone Creek Subdivision is building out, and South Ridge and Stone Creek Commons are capturing the last service area limits in that water shed. There are some other growth constraints that make this direction particularly important. To the north, the Airport has a lot of land holdings and not a lot of development interests. For other various reasons, we are not seeing a lot of development activity north of Interstate 74 and west of Cunningham Avenue. There is some residential development north of Interstate 74 and east of Cunningham Avenue, but a lot of this residential is shown in the Comprehensive Plan as being "rural residential", so it is not intensively development. West of the Urbana city limits is the City of Champaign. In years past, we had looked to grow somewhat south and west, and now this area is University of Illinois' holdings. So, the City of Urbana has very small directions in which we can grow, and it just so happens those directions have the sewer limit that we are facing.

There is one property, which is the Pennell holdings, on the east side of IL Route 130 that would not be able to develop because of the lack of sewers. Menards will essentially take up the remainder of the sewer capacity.

Mr. Myers again added that if the proposed sewer interceptor lines and pump station are built, it would be the first step in providing additional sewer capacity but would not automatically open an entire drainage basin for development. Developers are still going to have to build sewer lines over the years to connect with the sewage collection system.

Mr. Pollock questioned how far away from the proposed pump station would development be able to happen if the proposed sewer interceptor lines and pump station are built. Mr. Myers answered by saying that ultimately it could serve to just east of Cottonwood Road. Mr. Jamison added that the proposed project would be a lift station that would handle the existing Myra station capacity, the force main to get the sewage to the wastewater treatment plant, and only 400 feet of interceptor outside of the lift station. Any extension of the interceptors to the north, to the south and to the west would be development driven. So, if a developer would come in there, then the interceptor would need to be expanded to serve that area, and the developer would pay for a portion of the cost of the expansion. The City would be building a basis to serve a large area, but developers would drive how that occurs within that area.

Mr. Grosser inquired if a developer wanted to build south of the Myra Ride Subdivision, would the developer have to pay to run a line all the way to the proposed new lift station. Mr. Jamison noted that there is a temporary lift station being proposed for this area. So, they would probably build the temporary lift station, which would pump into the existing system and then develop the

interceptors as more development occurred to the east and to the north. He stated that there is a larger map that is part of the report that shows all of the tentative interceptor routing. It is tentative because as development occurs, it might take a different route. Mr. Myers added that the enclosed color map was intended to be a guide for the more technical larger map.

Ms. Upah-Bant asked what would be the expected lifespan of the proposed new interceptor and pump station. Mr. Jamison responded by saying that it should serve for 30 years.

Mr. Hopkins understood the predicted location of the new lift station has been slightly moved, which actually gets it lower. The better survey information has allowed an estimate of what area could be served from the proposed new station. So instead of being roughly a fifth of a mile west of Cottonwood being served, the limits would be a fifth of a mile east of Cottonwood Road. Mr. Jamison said that this is correct. The proposed study was based on the latest and more accurate Champaign County topographical data. The old report was based on United States Geological Survey (USGS) contour maps which are more general and less accurate. The newest topographic data has allowed UCSD to more accurately show the serviceable area with the same depth lift station in a different and better location.

Mr. Hopkins mentioned that he pointed this out because it is one of the things that some people are seeing in the proposed study that is different from the line shown in the Comprehensive Plan's Future Land Use Maps. The change results in a technical difference in calculation and not from a difference in the proposed size of the lift station or general design or strategy for expanding the sewer service. The 1973 Comprehensive Plan actually shows a treatment plant in this area. UCSD and the City of Urbana have been planning to provide sewer service in this area for a long time. Mr. Myers commented that some year there may be a need for another sewage treatment plant but this is too far beyond our current plans. Mr. Hopkins stated that he meant the general pattern of intended extension of sewers has been following a strategy for at least 35 years. The technology changes a little bit, but basic strategies hold.

Mr. Grosser inquired if the current sewer is at capacity, would the Pomology tract need to run line to the new pump station and interceptor if they decided to expand. Mr. Jamison explained that the Pomology Tract drains to the west down to the lift station on Race Street and gets sent to the west sewage treatment plant. Mr. Grosser questioned whether this negatively impacted the fact that the sewers in this area are basically to capacity. Mr. Jamison said no, it does not.

Ms. Stake read from the staff report that the Illinois Department of Natural Resources (DNR) signed off regarding endangered species and wetlands, and a copy of the DNR's report would be obtained. The staff report also states that an archeological survey of the area would be performed as part of the project, as well as the Illinois Historic Preservation Association and Army Corps of Engineers would sign off. When will all of this be performed and reports made available for the Plan Commission's review? Mr. Myers replied that if you use Federal money or a Federal permit, or Federal money passed through the State, there are safeguards to make sure that archaeological, historical, and environmental resources are not going to be impacted. These surveys, studies and reports need to be done before construction can take place. Mr. Jamison added that these surveys, studies and reports were also part of the Illinois Environmental Protection Agency permitting process for these types of facilities.

Mr. Pollock questioned what type of recommendation is the Mayor and City Council looking for. Mr. Myers stated that the Plan Commission is to provide feedback on the proposed study in terms of the planning implications for the proposed East Urbana sewer interceptor. Mr. Pollock commented that he took a look at some of the technical information and feels that it is way beyond his capacity. He commented that City staff is saying that we need to do this in order to continue growth and development, then it makes common sense to him that this is something the City needs to embark on. Ms. Tyler stated that a motion would be very helpful pertaining to the planning implications and the conformance to the Comprehensive Plan.

Mr. Grosser moved that the Plan Commission send the report to the City Council with a recommendation that they adopt it. Ms. Upah-Bant seconded the motion.

Mr. Grosser commented that any development in the City of Urbana is going to be on the east side. If you want to do development, without knowing the details of the costs or the technical parts of it, we want sewer interceptors in the area where we will grow.

Mr. Ward suggested a friendly amendment that the Plan Commission sees the proposed study as being in compliance with the Comprehensive Plan. The amendment was accepted by both Mr. Grosser and Ms. Upah-Bant.

Ms. Upah-Bant wondered if it was not in the Plan Commission's purview to comment on the financial aspects. She did not understand what the funding scenario is, and in the 2001 agreement, financing was an issue. Mr. Myers stated that the Mayor did not ask the Plan Commission to limit their comments to one aspect of the report. However, the Plan Commission is an expert on the planning implications and it would be helpful to comment on this aspect of the report. If the Plan Commission members have any other comments in other areas, then the City Council would appreciate hearing them.

Ms. Upah-Bant inquired as to how the financing in the proposed plan differs from the two-tiered plan that was approved before. Mr. Jamison answered by saying that financing of the construction would be by UCSD through the EPA Low Interest or Revolving Loan Program. UCSD would borrow the funds to construct the new interceptor, and then they would send the City of Urbana a bill twice a year. The City of Urbana is proposing to recover our costs from the developers as they develop the area tributary to this by a per acre or population equivalent fee that we would charge. This fee would be similar to the interceptor cost recovery fee that the UCSD currently charges. The City of Champaign and the Village of Savoy have a similar fee that they have developed as part of the developments to the south and west of those communities.

Ms. Upah-Bant expressed concern about those costs being significant enough to impact whether a developer chooses to develop in the City of Urbana versus the City of Champaign. Mr. Jamison stated that the estimated fee would be very competitive with that in other communities. The fee would be lower than some of the communities, and higher than the lowest one.

Mr. Pollock clarified that not only would a developer pay for running the lines to the station, but also pay a portion of the cost to construct the station. Mr. Jamison said this is correct. Ms. Upah-Bant stated that until development occurs the City of Urbana would be paying for the

station. Mr. Jamison replied that the City would need to do some internal financing until we are able to recover the costs through development.

Mr. Myers understood that the UCSD would collect the fees from the developers for the City of Urbana. Mr. Jamison commented that this is the arrangement that UCSD has with the City of Champaign and the Village of Savoy. UCSD collects the fee as they collect their own cost recovery fees from the developer. It is a condition of getting a permit from UCSD.

Ms. Stake wondered if the City is trying to plan mostly for regional business in this area. Ms. Tyler responded by saying that accepting the proposed study would not change the Comprehensive Plan designations, and it would not presume any new designation on the future planning.

The roll call vote on the amended motion was as follows:

Mr. Grosser	-	Yes	Mr. Hopkins	-	Yes
Mr. Pollock	-	Yes	Ms. Stake	-	Yes
Ms. Upah-Bant	-	Yes	Mr. Ward	-	Yes

The motion was passed by unanimous vote.

9. AUDIENCE PARTICIPATION

There was none.

10. STAFF REPORT

Mr. Myers reported on the following:

11. STUDY SESSION

There was none.

12. ADJOURNMENT OF MEETING

The meeting was adjourned at 8:42 p.m.

Respectfully submitted,

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Robert Myers, AICP, Planning Division Manager
Urbana Plan Commission